

What is claimed is:

1 1. A method for playing an audio track during video trick mode playback of a  
2 video presentation, the method comprising:

3 reading [a coded] digital data from a storage medium, said [coded] digital data  
4 representing audio programming corresponding to the video presentation;

5 decoding a plurality of digital audio samples corresponding to a selected  
6 portion of the video presentation from a portion of said read digital data;

7 transforming said digital audio samples from time domain to corresponding  
8 frequency domain audio samples; and

9 scaling a playback audio frequency of said frequency domain audio samples  
10 in accordance with said trick mode playback.

1 2. The method according to claim 1, further comprising:

2 dropping selected ones of said time domain audio samples at a rate  
3 approximately corresponding to a selected trick mode video playback speed of said  
4 video presentation; and

5 generating an audio playback signal corresponding only to a remaining set of  
6 said audio samples.

1 3. The method according to claim 2, wherein said time domain audio samples  
2 are dropped at an average rate of every (n-1) of every n samples, where n is equal  
3 to the selected trick mode playback speed relative to a normal playback speed..

1 4. The method according to claim 3, wherein said scaling step further comprises  
2 scaling said playback audio frequency by a factor of approximately  $1/n$ .

1 5. The method according to claim 4, wherein said scaling step further comprises  
2 scaling an amplitude of said frequency domain audio samples by factor of  
3 approximately  $1/n$ .

1 6. The method according to claim 1, wherein said scaling step further comprises  
2 transforming said scaled frequency domain audio samples to corresponding time  
3 domain digital audio samples.

1 7. The method according to claim 1, further comprising:  
2 repeating selected ones of said time domain audio samples at a rate inversely  
3 proportional to a selected trick mode video playback speed of said video  
4 presentation to produce a trick mode set of audio samples; and,  
5 generating an audio playback signal corresponding to said trick mode set of  
6 said audio samples.

1 8. The method according to claim 7, wherein said time domain audio samples  
2 are repeated at an average rate of about  $1/n$  times, where  $n$  is equal to the selected  
3 trick mode playback speed relative to a normal playback speed.

1 9. The method according to claim 8, wherein said scaling step further comprises  
2 scaling said playback audio frequency by a multiplying factor of approximately  $1/n$ .

1 10. The method according to claim 9, wherein said scaling step further comprises  
2 scaling an amplitude of said frequency domain audio samples by factor of  
3 approximately  $n$ .

1 11. The method according to claim 1 wherein said storage medium is selected  
2 from the group consisting of a DVD, a magneto-optical disk, a magnetic hard disk, a  
3 video CD, and a solid state memory device.

1 12. The method according to claim 1 wherein said coded digital data has an  
2 MPEG format and said reading step further comprises decoding an MPEG bit stream  
3 to obtain said audio samples.

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1 13. An apparatus for playing an audio track during video trick mode playback of a  
2 video presentation, the method comprising:

3 a storage medium reader for reading digital data from a storage medium, said  
4 [coded] digital data comprising audio programming corresponding to the video  
5 presentation;

6 a decoder for decoding from a portion of said read digital data [comprising]  
7 representative of said audio programming, a plurality of digital audio samples  
8 corresponding to a selected portion of the video presentation;

9 a digital signal processor (DSP) comprising a fast Fourier transform (FFT)  
10 processing element for transforming said digital audio samples from time domain to  
11 corresponding frequency domain audio samples; and,

12 said digital signal processor comprising a scaling element for scaling a  
13 playback audio frequency of said frequency domain audio samples in accordance  
14 with said trick mode playback.

1 14. The apparatus according to claim 13, wherein at least one of said decoder  
2 and said DSP comprises means for dropping selected ones of said time domain  
3 audio samples at a rate approximately corresponding to a selected trick mode video  
4 playback speed of said video presentation.

1 15. The apparatus according to claim 14, wherein said time domain audio  
2 samples are dropped at an average rate of  $(n-1)$  of every  $n$  samples, where  $n$  is  
3 equal to the selected trick mode playback speed relative to a normal playback  
4 speed.

1 16. The apparatus according to claim 15, wherein said scaling element scales  
2 said playback audio frequency by a factor of approximately  $1/n$ .

1 17. The apparatus according to claim 16, wherein said scaling element further  
2 comprises an amplitude adjusting element for scaling an amplitude of said frequency  
3 domain audio samples by factor of approximately  $1/n$ .

1 18. The apparatus according to claim 13, wherein said DSP further comprises an  
2 inverse FFT (IFFT) processing element for transforming said scaled frequency  
3 domain audio samples to corresponding time domain digital audio samples for said  
4 audio playback signal.

1 19. The apparatus according to claim 13, wherein at least one of said decoder  
2 and said DSP repeats selected ones of said time domain audio samples at a rate  
3 inversely proportional to a selected trick mode video playback speed of said video  
4 presentation to produce a trick mode set of audio samples.

1 20. The apparatus according to claim 19, wherein said audio samples are  
2 repeated at an average rate of about  $1/n$  times, where  $n$  is equal to the selected trick  
3 mode playback speed relative to a normal playback speed.

1 21. The apparatus according to claim 20, wherein said scaling element scales  
2 said playback audio frequency by a multiplying factor of approximately  $1/n$ .

1 22. The apparatus according to claim 21, wherein said DSP further comprises an  
2 amplitude scaling element for scaling said frequency domain audio samples by a  
3 factor of approximately  $n$ .

1 23. The apparatus according to claim 13, wherein said storage medium is  
2 selected from the group consisting of a DVD, a magneto-optical disk, a magnetic  
3 hard disk, a video CD, and a solid state memory device.

1 24. The apparatus according to claim 13, wherein said coded digital data is an  
2 MPEG format and said reading step further comprises decoding an MPEG bit stream  
3 to obtain said audio samples.